

Amendment to Claims

This listing of Claims will replace all prior versions and listings of claims in this Application:

Listing of Claims

Claim 1. (CURRENTLY AMENDED) A method for the topology-discovery and organization of a plural-node communication network comprising

selecting a central coordinator node (CCo) from a collection of nodes initially lacking a CCo,

thereafter employing the selected CCo to conduct a procedure for discovering, from the mentioned collection of nodes, all nodes which are optimally capable of being organized into a network, wherein all such discovered capable nodes may effectively be organized to communicate with all other nodes, and

with respect to such discovered, capable nodes, creating a network-global connectivity database in the form of a network-organizing communication topology table that describes enablement of bidirectional communication between all nodes, and

at a point in time which follows initial creation of the mentioned topology table, conducting an exercise to confirm the appropriateness of the currently selected CCo, and if such appropriateness is not confirmed, to perform a transfer of CCo responsibilities from the current CCo to a newly selected CCo.

Claim 2. (ORIGINAL) The method of claim 1, wherein the discovering procedure includes discovering both non-hidden and hidden nodes.

Claim 3. (ORIGINAL) The method of claim 2, wherein the discovering procedure further includes discovering suitable proxy nodes which are non-hidden nodes, and which will stand as CCo surrogates for communication between the CCo and selected hidden nodes, and will do so in a manner whereby all hidden nodes can effectively communicate with the CCo.

Claim 4. (ORIGINAL) The method of claim 3 which further includes enabling communication between the CCo and each hidden node via an intermediary proxy node.

Claim 5. (CANCELLED WITHOUT PREJUDICE)

Claim 6. (CANCELLED WITHOUT PREJUDICE)

Claim 7. (CURRENTLY AMENDED) A method for self-organizing, from a group of nodes, a centralized communication network where the group initially lacks a central coordinator node (CCo) comprising

engaging initially in a nominally non-transmission listening-mode period to detect the presence of a beacon,

following the listening-mode period, if no beacon has been detected, allowing an initial transmission-mode period wherein the first node to transmit declares itself to be the CCo, and

after such a declaration, organizing the group of nodes into a network reflected by

a topology table wherein each node can effectively communicate with every other node, said organizing including, engaging in a discovery-mode period wherein each node creates a disconnected-node list which it communicates to the CCo, and the topology table is constructed on the basis of such communicated discover-node lists.

Claim 8. (ORIGINAL) The method of claim 7, wherein enabled node-to-node communication is bi-directional.

Claim 9. (ORIGINAL) The method of claim 7, wherein said organizing includes admitting to the network both non-hidden and hidden nodes, and establishing, from the collection of non-hidden nodes, a proxy node intermediate each hidden node and the CCo.

Claim 10. (CANCELLED WITHOUT PREJUDICE)

Claim 11. (ORIGINAL) The method of claim 7, wherein, at a point in time which is after the time of performing the process of organizing, the status of the then self-declared CCo is subject to a process of confirmation.

Claim 12. (CANCELLED WITHOUT PREJUDICE)

Claim 13. (CANCELLED WITHOUT PREJUDICE)

Claim 14. (CURRENTLY AMENDED) A method for organizing, from a group of nodes, a communication network based upon the assumption that the organized network will include a central coordinator, and in a setting wherein each node in the group has topology knowledge regarding (a) the identities of all other nodes in the group, and (b) the respective qualities of communication links that directly exist between different ones of these nodes, said method comprising

performing an analysis of such topology knowledge to identify the most appropriate candidate node to perform, in at least the immediate future, the role of a central coordinator node, and

following said performing, collectively engaging plural nodes in the group in the selection of that candidate node to be the then-designated central coordinator node, said engaging in selection including a Device Class criterion which is applied to determine which node in the network possesses the highest class among the nodes.

Claim 15. (CURRENTLY AMENDED) The method of claim 14, wherein the activity involving selection further includes a Maximum Coverage criterion which is applied to determine the node in the network which supports bi-directional links with the maximum number of nodes.

Claim 16. (CURRENTLY AMENDED) The method of claim 14, wherein the activity involving selection further includes a Maximum Capacity criterion which is applied to determine the node in the network which exhibits the most desirable throughput characteristics.

Claim 17. (CANCELLED WITHOUT PREJUDICE)

Claim 18. (CURRENTLY AMENDED) The method of claim 14, wherein the activity involving selection further includes a Lowest Duty Cycle criterion which is applied to determine the node in the network which is characterized with having the highest percentage of time available for attending to network control functions.

Claim 19. (CURRENTLY AMENDED) The method of claim 14, wherein the activity involving selection further includes a combination of plural criteria selected from the list including (a) Maximum Coverage, (b) Maximum Capacity, (c) Device Class, and (d) Lowest Duty Cycle.

Claim 20. (CURRENTLY AMENDED) A network method for self-organizing a group of nodes into a communication network where the nodes are all operatively connected to a shared communication medium, certain nodes may be hidden nodes, and there is an initial assumption that there is no central coordinator node, said method comprising engaging in a discovery process to identify the qualities of direct and indirect internodal communication capabilities, and
as a consequence of said engaging, establishing, as desired, at least one proxy node to facilitate bi-directional communication with any hidden nodes, said establishing employing the following algorithm:

1. Let S_{PC_0} represent the set of Proxy Coordinator nodes.

2. For each node $k \in D_i$ for some $D_i \in T_{CCo}$, and $k \notin N$, if there exists a node $j \in N$, and $j \in S_{PCo}$, and $j \leq k$, then j is the PCo for node k .
3. For each node $k \in D_i$ for some $D_i \in T_{CCo}$, and $k \notin N$, if there exists a node $j \in N$, and $j \notin S_{PCo}$, and $j \leq k$, then j is designated the PCo for node k and added to the set of PCos, S_{PCo} .
4. For each node $k \in D_i$ for some $D_i \in T_{CCo}$, and $k \notin N$, if there DOES NOT exists a node $j \in N$, and $j \leq k$, then the hidden node k cannot be reached by any node in the network N and therefore has no PCo.

Claim 21. (CANCELLED WITHOUT PREJUDICE)